WHAT IS CLAIMS IS:

1. An apparatus for calculation of a correlation value corresponding to a frequency error, comprising:

a 0-th degree correlation means for taking, to output, a correlation between a reference signal and a measurement signal;

an n-th degree correlation means including a frequency addition calculator for calculating a frequency component addition signal having a frequency component added to the reference signal, and a correlation calculator for taking, to output, a correlation between the frequency component addition signal and the measurement signal; and

an addition means for adding an output of the 0-th degree correlation means and an output of the n-th degree correlation means.

2. An apparatus for calculation of a correlation value corresponding to a frequency error according to claim 1, wherein the frequency addition calculator multiplies the reference signal by $e^{j\omega t}$, where $\omega = 2\pi f$ ( f is a frequency).

3. An apparatus for calculation of a correlation value corresponding to a frequency error according to claim 1, wherein the frequency addition calculator takes an EXOR between a digital clock of a constant frequency and the reference signal.

4. An apparatus for calculation of a correlation value corresponding to a frequency error according to claim 1, wherein the reference signal is a data symbol having a spread code superposed thereon, and the frequency addition calculator takes an EXOR between the data symbol and a digital clock of a constant

frequency, to superpose the spread code.

5. A method for calculation of a correlation value corresponding to a frequency error, comprising:

a 0-th degree correlation step for taking, to output, a correlation between a reference signal and a measurement signal;

an n-th degree correlation step including a frequency addition calculator for calculating a frequency component addition signal having a frequency component added to the reference signal, and a correlation calculator for taking, to output, a correlation between the frequency component addition signal and the measurement signal; and

an addition step for adding an output of the 0-th degree correlation step and an output of the n-th degree correlation step.

6. A computer-readable medium embodying a program of instructions for execution by the computer to perform a method for calculation of a correlation value corresponding to a frequency error, comprising:

a 0-th degree correlation step for taking, to output, a correlation between a reference signal and a measurement signal;

an n-th degree correlation step including a frequency addition calculator for calculating a frequency component addition signal having a frequency component added to the reference signal, and a correlation calculator for taking, to output, a correlation between the frequency component addition signal and the measurement signal; and

an addition step for adding an output of the 0-th degree correlation step and an output of the n-th degree correlation step.

7. A correlation system comprising:

a frequency adding means for receiving a reference signal R0(t) and adding thereto a predetermined plurality n of frequency components (F1 - Fn) to output a resultant reference signal R1(t) - Rn(t);

an adder for receiving n reference signals R1(t) - Rn(t) and a single said reference signal R0(t) as a base and adding them together to output a corrected reference signal R(t); and

a correlator for taking a correlation between a measurement signal S(t) and said corrected reference signal R(t) to output a correlation output signal.

8. A correlation system according to claim 7, wherein the frequency adding means multiplies the reference signal R0(t) by $e^{-jwt}$.

9. A correlation system according to claim 7, wherein the frequency adding means outputs an exclusive logical sum (EXOR) between digital clocks of frequencies corresponding to the frequency components (F1 - Fn) and the reference signal R0(t).

10. A correlation system including a frequency adding means having a predetermined plurality n of multiplying means (EXOR), an adder, a spreader, and a correlator, wherein

the plurality n of multiplying means (EXOR) each receive a corresponding frequency component (F1 - Fn) and a symbol data D0(t) as a base and multiply both of them to output a multiplied symbol data D1(t) - Dn(t),

the adder receives said symbol data D1(t) - Dn(t) from a respective multiplying means (EXOR) and said symbol data D0(t) as the base and performs an adding process for them to output a resultant addition symbol data D(t),

the spreader receives a spread signal of said addition symbol data D(t) and superposes thereon a spread code L(t) to output a corrected reference signal R(t), and

the correlator receives said corrected reference signal R(t) and a measurement signal S(t) and takes a correlation between them to output a correlation output signal.

11. A correlation system according to claim 7, wherein the measurement signal S(t) is a reception signal of a spread signal spectrum spread.

12. A correlation system according to claim 10, wherein the measurement signal S(t) is a reception signal of a spread signal spectrum spread.

13. A correlation system according to claim 7, wherein the measurement signal S(t) is a spectrum spread signal of a W-CDMA system.

14. A correlation system according to claim 10, wherein the measurement signal S(t) is a spectrum spread signal of a W-CDMA system.

15. A correlation method comprising:

a frequency adding step for receiving a reference signal R0(t) and adding thereto a predetermined plurality n of frequency components (F1 - Fn) to output a resultant reference signal R1(t) - Rn(t);

an adding step for receiving n reference signals R1(t) - Rn(t) and a single said reference signal R0(t) as a base and adding them together to output a corrected reference signal R(t); and

a correlating step for taking a correlation between a measurement signal

S(t) and said corrected reference signal R(t) to output a correlation output signal.

16. A correlation method including a frequency adding step having a predetermined plurality n of multiplying step (EXOR), an adding step, a spreading step, and a correlating step, wherein

the plurality n of multiplying step (EXOR) each receive a corresponding frequency component (F1 - Fn) and a symbol data D0(t) as a base and multiply both of them to output a multiplied symbol data D1(t) - Dn(t),

the adding step receives said symbol data D1(t) - Dn(t) from a respective multiplying step (EXOR) and said symbol data D0(t) as the base and performs an adding process for them to output a resultant addition symbol data D(t),

the spreading step receives a spread signal of said addition symbol data D(t) and superposes thereon a spread code L(t) to output a corrected reference signal R(t), and

the correlating step receives said corrected reference signal R(t) and a measurement signal S(t) and takes a correlation between them to output a correlation output signal.

17. A computer-readable medium embodying a program of instructions for execution by the computer to perform a correlation method comprising:

a frequency adding step for receiving a reference signal R0(t) and adding thereto a predetermined plurality n of frequency components (F1 - Fn) to output a resultant reference signal R1(t) - Rn(t);

an adding step for receiving n reference signals R1(t) - Rn(t) and a single said reference signal R0(t) as a base and adding them together to output a corrected reference signal R(t); and

a correlating step for taking a correlation between a measurement signal

S(t) and said corrected reference signal R(t) to output a correlation output signal.

18. A computer-readable medium embodying a program of instructions for execution by the computer to perform a correlation method including a frequency adding step having a predetermined plurality n of multiplying step (EXOR), an adding step, a spreading step, and a correlating step, wherein

the plurality n of multiplying step (EXOR) each receive a corresponding frequency component (F1 - Fn) and a symbol data D0(t) as a base and multiply both of them to output a multiplied symbol data D1(t) - Dn(t),

the adding step receives said symbol data D1(t) - Dn(t) from a respective multiplying step (EXOR) and said symbol data D0(t) as the base and performs an adding process for them to output a resultant addition symbol data D(t),

the spreading step receives a spread signal of said addition symbol data D(t) and superposes thereon a spread code L(t) to output a corrected reference signal R(t), and

the correlating step receives said corrected reference signal R(t) and a measurement signal S(t) and takes a correlation between them to output a correlation output signal.

19. An apparatus for calculation of a correlation value corresponding to a frequency error, comprising:

a 0-th degree correlation device that takes, to output, a correlation between a reference signal and a measurement signal;

an n-th degree correlation device that includes a frequency addition calculator for calculating a frequency component addition signal having a frequency component added to the reference signal, and a correlation calculator for taking, to output, a correlation between the frequency component addition

signal and the measurement signal; and

an addition device that adds an output of the 0-th degree correlation device and an output of the n-th degree correlation device.

20. A correlation system comprising:

a frequency adding device that receives a reference signal R0(t) and adds thereto a predetermined plurality n of frequency components (F1 - Fn) to output a resultant reference signal R1(t) - Rn(t);

an adder that receives n reference signals R1(t) - Rn(t) and a single said reference signal R0(t) as a base and adds them together to output a corrected reference signal R(t); and

a correlator that takes a correlation between a measurement signal S(t) and said corrected reference signal R(t) to output a correlation output signal.

21. A correlation system including a frequency adding device having a predetermined plurality n of multiplying device (EXOR), an adder, a spreader, and a correlator, wherein

the plurality n of multiplying device (EXOR) each receive a corresponding frequency component (F1 - Fn) and a symbol data D0(t) as a base and multiply both of them to output a multiplied symbol data D1(t) - Dn(t),

the adder receives said symbol data D1(t) - Dn(t) from a respective multiplying device (EXOR) and said symbol data D0(t) as the base and performs an adding process for them to output a resultant addition symbol data D(t),

the spreader receives a spread signal of said addition symbol data D(t) and superposes thereon a spread code L(t) to output a corrected reference signal R(t), and

the correlator receives said corrected reference signal R(t) and a

measurement signal S(t) and takes a correlation between them to output a correlation output signal.